

12/01/98

JCS25 U.S. PTO

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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12/01/98

| BUCKET NUMBER | ANTICIPATED CLASSIFICATION OF THIS APPLICATION: | | PRIOR APPLICATION | |
|---------------|---|----------|-------------------|----------|
| | CLASS | SUBCLASS | EXAMINER | ART UNIT |
| 8530.318USC1 | 219 | 387.000 | J. PELHAM | 3742 |

CERTIFICATE UNDER 37 CFR 1.10:

"Express Mail" mailing label number EL119857362US

Date of Deposit: December 7, 1998

I hereby certify that this paper or fee is being deposited with the U.S. Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to Assistant Commissioner for Patents, Washington, D.C. 20231.

By: *Deanne R. Kelly*
Name.**CONTINUATION APPLICATION UNDER 37 C.F.R. § 1.53(b)**

BOX PATENT APPLICATION
Assistant Commissioner for Patents
Washington, DC 20231

Dear Sir:

This is a request for filing a continuation application under 37 CFR § 1.53(b) of Serial No. 08/706,651, filed on September 6, 1996 entitled THERMAL STORAGE AND TRANSPORT by the following inventor(s):

| | | | |
|-------------------------|---|--|--|
| Full Name Of Inventor | Family Name BALDWIN | First Given Name WAYNE | Second Given Name D. |
| Residence & Citizenship | City ASHEBORO | State or Foreign Country NORTH CAROLINA | Country of Citizenship USA |
| Post Office Address | Post Office Address 1108 CRANBROOK WAY | City ASHEBORO | State & Zip Code/Country NORTH CAROLINA 27203 / USA |
| Full Name Of Inventor | Family Name ABE | First Given Name FUJIO | Second Given Name |
| Residence & Citizenship | City GREENSBORO | State or Foreign Country NORTH CAROLINA | Country of Citizenship USA |
| Post Office Address | Post Office Address 4705 KINGSWOOD DRIVE | City GREENSBORO | State & Zip Code/Country NORTH CAROLINA 27410 / USA |

- ☒ Enclosed is a copy of the prior application; including the specification, claims, drawings, oath or declaration showing the applicant's signature, and any amendments referred to in the oath or declaration filed to complete the prior application. (It is noted that no amendments referred to in the oath or declaration filed to complete the prior application introduced new matter therein.) The continuing application is as follows: 12 pages of specification, 19 claims, 1 pages of abstract, 4 sheets of drawings, and 4 pages of oath or declaration.

☒ The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
- ☐ Cancel original claims _____ of this application before calculating the filing fee. (At least one original independent claim must be retained for filing purposes.)

3. ☒ The filing fee is calculated below:

CLAIMS AS FILED

| NUMBER FILED | NUMBER EXTRA | | RATE | FEE |
|-----------------------------------|--------------|---|--------------------------|----------|
| TOTAL CLAIMS: 19 -20 | 0 | x | \$18.00 | \$0.00 |
| INDEPENDENT CLAIMS 3 -3 | 0 | x | \$9.00 | \$0.00 |
| | | | BASIC FILING FEE: | \$760.00 |
| | | | TOTAL FILING FEE: | \$760.00 |
| | | | | |

☐ A Verified Statement that this filing is by a small entity is already filed in the prior application.

☐ A Verified Statement that this filing is by a small entity is attached.

☒ Payment of fees:

☒ Attached is a check in the amount of \$760.00 .

☐ Please charge Deposit Account No. 13-2725.

☒ The Commissioner is hereby authorized to charge any additional fees as set forth in 37 CFR §§ 1.16 to 1.18 which may be required by this paper or credit any overpayment to Account No. 13-2725.

☒ Amend the specification by inserting before the first line the sentence:

"This application is a Continuation of application Serial No. 08/706,651, filed September 6, 1996, which application(s) are incorporated herein by reference."

☒ A set of formal drawings (4 sheets) is enclosed.

☐ Priority of application Serial No. _____, filed on _____ in _____, is claimed under 35 U.S.C. 119.

☐ The certified copy has been filed in prior application Serial No. _____, filed _____.

9. ☒ The prior application is assigned of record to Vesture Corporation located at 120 East Pritchard Street, Asheboro, NC 27203.

10. ☒ The Power of Attorney in the prior application is to:

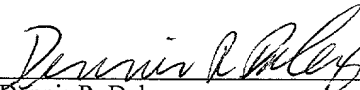
Merchant, Gould, Smith, Edell,
Welter & Schmidt, P.A.
3100 Norwest Center
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11. ☐ A preliminary amendment is enclosed. (Claims added by this amendment have been properly numbered consecutively beginning with the number next following the highest numbered original claim in the prior application.)
- ☐ Fee for excess claims is attached.
12. ☐ A petition and fee has been filed to extend the term in the prior application until _____. A copy of the petition for extension of time in the prior application is attached.
13. ☐ The inventor(s) in this application are less than those named in the prior application and it is requested that the following inventors identified above for the prior application be deleted:
14. ☐ Also Enclosed:
15. ☒ Address all future communications to the **Attention of Dennis R. Daley** (may only be completed by attorney or agent of record) at the address below.
16. ☒ A return postcard is enclosed.

Respectfully submitted,

MERCHANT, GOULD, SMITH, EDELL,
WELTER & SCHMIDT, P.A.
3100 Norwest Center
90 South Seventh Street
Minneapolis, MN 55402
612/332-5300

Date: December 1, 1998


Dennis R. Daley
Reg. No. 34,994
DRD:PSTcbb

THERMAL STORAGE AND TRANSPORT

5 I. Background of the Invention

1. Field of the Invention

This invention pertains to an apparatus for storing and transporting heated articles to provide a delayed discharge of heat to the article during transportation or storage. More particularly, this invention pertains to an apparatus for retaining a level of heat in a food product being transported or stored.

2. Description of the Prior Art

Food products (such as pizza) are frequently prepared and cooked at a store location. The prepared products are then delivered to a customer at a home or place of business.

A heated food product may be stored at the store location awaiting a delivery person's transportation of the food product to the customer. During both the storage and the transportation, the product may lose its sensible heat.

In the event of heat loss, a product may become unacceptable to a consumer. As a result, effort is made to retain the heat of the product after its cooking preparation.

In pizza delivery, it is common to prepare a pizza and store it in individual cardboard boxes. The cardboard boxes are then placed under heat lamps awaiting pickup by a delivery person. The delivery person then

stores the cardboard containers in a thermally insulated carrying case for delivery to the home owner.

The use of heat lamps for providing additional heat during storage and the use of thermally insulated carrying cases have improved the heat level of the product finally delivered to the consumer. However, it is still desirable to find a means for enhancing the heat level of the final product delivered to the consumer.

10 II. Summary of the Invention

According to a preferred embodiment to the present invention, a transport device is disclosed including a container having an interior volume for receiving a heated product. Disposed within the container is a heat transfer article having a thermal mass exposed in heat transfer relation to an electrically resistive coil. A power cord connects the coil to a source of electrical energy.

20 III. Brief Description of the Drawings

Fig. 1 is a perspective view of a thermal storage and transport device according to the present invention shown in an embodiment adapted for pizza delivery and shown used in one mode of use;

25 Fig. 2 is the view of Fig. 1 illustrating an alternate mode of use;

Fig. 3 is a cross-sectional longitudinal view, of the device of Fig. 1;

Fig. 4 is a cross-sectional longitudinal view of a novel thermal pack assembly for use in the device of Fig. 1; and

Fig. 5 is an exploded perspective view of the thermal pack assembly of Fig. 4.

IV. Detailed Description of the Preferred Embodiment

With reference now to the various figures in which identical elements are identically numbered throughout, a description of the preferred embodiment of the present invention will now be provided. The present invention will be described with reference to a container for storing and transporting heated food articles. In particular, the present invention will be described with reference to a pouch for storing and transporting pizza which is cooked and placed in individual cardboard boxes as is customary. While the invention is being disclosed in a preferred embodiment, it will be appreciated that the invention can be used in a wide variety of applications for storing or transporting heated articles where it is desired to maintain the heated articles at an elevated temperature relative to ambient temperature.

With reference to Figs. 1-3, a carrying pouch or case 10 is shown having a top wall 11, bottom wall 12, side walls 13, 14, rear wall 15, and front flap or cover 16. The walls 11-15 and flap 16 are formed of soft, pliable fabric layers 19 with thermal insulation 21 contained between the layers 19.

The flap 16 opens to expose a pouch interior 17. The pouch interior 17 is sized to receive a plurality of cardboard boxes each containing individual pizzas with the cardboard boxes stacked on top of one another. It will be appreciated that pouches 10 thus described for containing pizzas and formed of insulative lining form no part of this invention per se and are well known in the prior art. The rear wall 15 includes vent holes (not shown) for venting moisture from the interior 17

10 The improved pouch 10 includes novel features for enhancing the thermal retention capabilities of the pouch 10 and for carrying. Side walls 13, 14 and rear wall 15 are formed in two insulated segments (such as segments 15a, 15b in Fig. 3) separated by a stitch line 23. Line 23 runs
15 longitudinally along the midpoint of the height of walls 13-15 to permit the height of pouch 10 to be collapsed. Flap 16 is flexible along its length and is hinged to bottom wall 12 at a stitch line 25. For carrying, the pouch 10 includes an elongated strap 27 terminating at both
20 ends at an inverted V-shaped strap 29. Strap 27 is secured to the apex of the V-shaped strap 29. The V-shaped straps, 29 are positioned opposite both sidewalls 13, 14 (although only strap 29 opposite sidewall 14 is shown in Fig. 1). For weight distribution, the ends of V-shaped straps 29 are
25 positioned on opposite sides of the mid-points of side walls 13, 14. The straps 29 are joined by strap segments 29a running parallel along the underside of bottom wall 12 (Fig. 3) and stitched to wall 12 such that the load on strap 27 is divided along V-shaped straps 29 and

distributed along the bottom wall 12. Strap 27 is sized to fit around the neck of a delivery person 10a with rear wall 15 facing and abutting the waist of the delivery person 10a (Fig. 1).

5 Pouch 10 also includes a hand strap 31 shown in use in Fig. 2. Strap 31 includes a transverse strap 33 stitched to the intersection of sidewalls 13, 14 and top wall 11. Strap 31 also includes a longitudinal strap 35 stitched to the midpoint of strap 33 and to the midpoint of
10 the intersection of rear wall 15 and top wall 11.

 It will be noted that the flap 16 includes an area 37 of a hook and loop fastener (sold under the trademark Velcro) on the inner surface of flap 16 from its leading end 16a to a termination line 16b adjacent hinge
15 25. The Velcro fastener 37 secures to a mating Velcro fastener 39 disposed on a forward end of the upper wall 11. Accordingly, flap 16 may be folded over from an open position (shown in Figs. 1 and 3) to a closed position (Fig. 2) with the Velcro fasteners 37, 39 secured to one
20 another in order to secure the flap 16 in a closed position. Since area 37 is larger than Velcro strip 39, the flap 16 can be secured to strip 39 at any one of a number of closed positions. For example, Fig. 2 shows flap 16 secured to top wall 11 in one position (illustrated by
25 the position of leading end 16a in solid lines). The phantom line 16a shows flap 16 extended over top wall 11 to partially cover top wall 11 to accommodate a smaller number of articles within pouch 10.

The wide walls 13, 14 include triangular gusset flaps 13a, 14a, which vary from a maximum thickness at the leading end 11a of the upper wall 11 to a minimum thickness at leading end 16a of the flap 16. The side flaps 13a, 14a include folds 23a such that as the flap 16 is moved to the closed position, the folds 23a cause the flaps 13a, 14a to fold inwardly and cover side openings to the interior 17 (as illustrated in Fig. 2). The side flap 14a is secured to flap 16 by a Velcro fastener 45 for reasons that will become apparent. Accordingly, when the flap 16 is moved to the closed position, the side flaps 13a, 14a cover the openings and prevent air from passing from the interior 17 out of the pouch 10. This is an enhancement over prior art pouches 10 which did not include such flaps. In the prior art, when the forward flap was moved to a closed position, opposing surfaces of the forward flap and the side walls of the prior art pouches defined a large opening for air to flow from the interior of the pouch to the exterior of the pouch.

The bottom wall 12 includes a cover 12a disposed within the interior 17. The cover 12a is disposed in parallel overlying relation to the interior of the bottom wall 12. Cover 12 extends beyond hinge 25 (as illustrated in Fig. 3) and terminates at a Velcro strap 41 for sealing attachment to area 37.

The cover 12a defines a separate interior volume (or sub-chamber) 43 which is accessible through an opening at a leading end of the cover 12a. Chamber 43 is sized to receive a thermal pack assembly 20. The thermal pack

assembly 20 includes a rigid base 100 which is preferably formed of wood or other non-thermally conductive material with the base 100 sized to be received within the chamber 43 and substantially fill the chamber 43 with the base 100 being parallel to cover 12a. The thermal pack assembly 20 further includes a thermally insulating foam cushion 102 disposed on an upper surface of the base 100 with the foam cushion 102 substantially covering base 100 and secured thereto through any suitable means such as adhesive or the like. An upper surface of the foam cushion 102 is provided with a foil cover 104 which is a thermally conductive metal foil completely covering the upper surface of the foam cushion 102.

As shown in Fig. 5, a heating coil subassembly 103 includes an electrically resistive heating coil 105 disposed in a generally rectangular plane. The heating coil 105 is sandwiched between two thermally conductive metal foils 106, 108. The foils 106, 108 are sealed by metallic tape 110 (not shown in Fig. 4) so that liquid such as water or other undesirable elements cannot be admitted into contact with the coil 105. Aluminum tape 112 secures the subassembly 103 to the foil layer 104 and base 100.

The subassembly 103 includes a power cord 114 having a neutral and an energized conductor 114a, 114b. The neutral conductor 114a is connected to one end of the coil 105. The energized conductor 114b is connected to an opposite end of the coil 105. The energized conductor 114b includes first and second thermostats 116, 118 connected in series with the coil 105. The cord 114 terminates at a

conventional wall outlet plug 120 such that the coil 105 can be connected to an AC source of electrical power simply by inserting the plug 120 within a wall outlet. A plastic clip 122 secures the cord 114 to base 100.

5 The subassembly 103 is secured to the underside of a thermal retention pouch 200. The pouch 200 is secured to subassembly 103 and base 100 by metallic tape 112.

 The thermal retention pouch 200 is a completely sealed envelope of plastic in which is contained an open
10 cell foam pad 202. The foam pad is impregnated with water 204 contained within the pouch 200. The pouch 200 is partially evacuated during formation. As a result of this assembly, when the coil 105 is energized and distributes heat, the heat is passed into the pouch 200 and the water
15 temperature within the pouch 200 is elevated. The water 204 retains the heat to later slowly release the heat over time as sensible energy when the cord 114 is disconnected from a power source. It will be appreciated that a pouch 200 thus described forms no part of this invention per se.
20 An example of such is shown in commonly assigned U.S. Patent No. 5,357,693 and 5,500,010.

 Having thus generally described the structure of the present invention, it will be noted that the pouch 200 and resistive heating element 105 have substantially equal
25 surface areas such that the resistive heating element 105 produces heat along the entire undersurface of the pouch 200. The upper foil 106 distributes heat evenly from the coil 105 to the undersurface of the pouch 200 to prevent localized overheating. Overheating is also avoided through

thermostats 116, 118. The first thermostat 116 is selected to open at $100^{\circ}\text{C} \pm 5^{\circ}\text{C}$. The second thermostat 118 is selected to open at $105^{\circ}\text{C} \pm 5^{\circ}\text{C}$. Accordingly, the second thermostat 118 acts as a safety override in the event of failure of the first thermostat 116. The coil 105 is shown in serpentine geometry. The coil 105 preferably has a length of about 18 feet with a resistance of about 5.6 ohms per foot.

In addition to transmitting heat to the pouch 200, the coil 105 transmits heat to the bottom foil 104 covering foam 102. Accordingly, when the plug 120 is inserted within a wall outlet, the coil 105 begins heating. Heat from the coil 105 is distributed to both the pouch 200 and to the foil 104.

The thermal pack assembly 20 includes its various elements being sized such that the surface area of the pouch 200 and coil 105 are smaller than the surface area of the foam pad 102 and base 100. While the pouch 200 and coil 105 have a width approximately equal to the width of the foam pad 102, their length is substantially smaller than the foam pad 102. The pouch 200 and electrical grid 105 are positioned in overlying relation to the foam pad 102 at a leading end 102a to provide an area 220 of pad 102 and foil 104 towards the trailing end 102b of the foam pad 102 which is not covered by the pouch 200 and the coil 105. Accordingly, during periods of time when either the coil 105 is being heated or the pouch 200 is releasing heat, the leading end 20a of the thermal pack assembly 20 will be hotter than the trailing end 20b.

As shown in Fig. 3, the thermal pack assembly 20 is placed within the chamber 43 with the trailing end 20b of the thermal pack assembly 20 positioned toward the rear wall 15 of the pouch 10. As a result, the greatest source of sensible heat is at the forward end 20a of the thermal pack 20 adjacent the flap 16. This is done recognizing that the greatest heat loss is through the forward end of the pouch 10 due to the presence of the flap 16. The combination of placing the thermal pack 20 near the front end of the flap 16 and providing the flap 16 with side flaps 13a, 14a provides the greatest amount of heat at the forward end plus enhances the structure of the pouch 10 to retain heat at the forward end.

The foil 104 covering the foam pad 102 transmits heat from the front end 20a of the assembly 20 towards the rear end 20b of the assembly 20. Accordingly, heat can radiate off of the foil 104 at the area 220 of the rear end of the assembly 20 to heat articles within chamber 17 positioned above the trailing end 20b of the assembly 20. The cord 114 is secured to plastic strap 122 (Fig. 5) to provide a strain relief such that a worker pulling on the cord 114 cannot dislodge the cord 114 from the grid 105.

With the structure thus described, the apparatus can be used in a pizza shop by inserting the plug 120 within a wall outlet. This energizes the coil 105 to transmit heat to the pouch 200 and thereby store heat within the pouch 200. Furthermore, the heat from the coil 105 is distributed to the interior 17 of the pouch 10 along the length and width of foil 104. As a result, pizza can

be formed, cooked and placed in individual cardboard boxes as is conventional. The filled cardboard boxes can then be placed within the chamber 17 awaiting pickup by a delivery person without the need for application of additional
5 energy through external heating lamps as was required in the prior art.

When a delivery person desires to deliver the pizzas, he simply unplugs the cord 114 from the outlet and transports the entire pouch 10 containing the pizza
10 packages. After the cord 114 is unplugged, additional energy is not being provided to the coil 105. Instead, the pouch 10 is releasing its stored energy to retain the pizza at a desired elevated temperature throughout transportation. During the storage phase, the flap 16 can
15 be closed since the cord 114 may be passed between the Velcro fasteners 37, 41 of the side wall flap 14a. As a result, the flaps 13a, 14a retain as much heat as possible within the interior 17.

Various enhancements can be made to the present
20 invention to improve its operation. For example, fluid may be lost through the walls of the plastic of the pouch 200 through time. Vapor can simply pass through the micropores of the plastic wall. To avoid such loss of fluid, metal can be vacuum deposited on the plastic to further seal the
25 plastic and prevent vapor loss through the plastic. This improves the duration and life of the pouch 200. The bottom foam layer 102 provides thermal insulation to the base 100 to ensure that as much heat as possible rises upwardly into the chamber 17 to heat the pizza. The bottom

board or base 100 is rigid to improve the carrying capability of the pouch for a delivery person.

While the preferred embodiment illustrates the use of water 204 within the pouch 200 as is conventional,
5 the heat sink could be a dielectric oil such as mineral oil or the like. Such oils are not electrically conductive. Further, such oils have higher vapor pressures and can be heated to higher temperatures without risk of bursting of the pouch 200. Such oils do not corrode metals and are
10 non-toxic. Also, a phase change material can be used in pouch 200 to store energy as the latent heat of the phase change.

The above specification, examples and data provide a complete description of the manufacture and use
15 of the composition of the invention. Since many embodiments of the invention can be made without departing from the spirit and scope of the invention, the invention resides in the claims hereinafter appended.

WHAT IS CLAIMED IS:

1. A carrying case for carrying a heated article, said case comprising:

a plurality of walls including spaced-apart sidewalls joined by a back wall at a trailing end and further joined by top and bottom walls to define a volume sized to receive said article, said walls further defining an opening at a leading end for access to said volume;

said walls formed of thermally insulative material;

a cover hingedly secured to an edge of one of said top and bottom walls for said cover to pivot between an open and a closed position, said cover in said closed position covering said opening;

flexible side flaps secured to respective ones of said sidewalls and to said cover, said side flaps including folds for urging said side flaps inwardly into said opening as said cover is moved to said closed position.

2. A carrying case according to claim 1 wherein said walls are formed of panels of thermally insulative material disposed between flexible material.

3. A carrying case according to claim 2 wherein said side walls and said rear wall are divided into upper and lower panels with a flexible fold line extending between said panels.

4. A carrying case according to claim 1 further comprising:

a first strap having opposite ends extending around separate ones of said sidewalls;

said strap sized to extend around a neck of a user with said rear wall opposing a waist of said user.

5. A carrying case according to claim 1 further comprising:

first and second V-shaped straps having apexes secured to said ends of said first strap;

ends of said V-shaped straps secured to said base with said ends of said V-shaped straps spaced-apart on opposite sides of a longitudinal mid-point of said base.

6. A thermal storage assembly comprising:

a heat retention member for absorbing and retaining sensible heat and for releasing said sensible heat over extended periods of time;

a heating coil assembly secured to a surface of said heat retention member, said heating coil assembly including a resistive heating coil disposed over an area substantially equal to an area of said heat retention member, said coil disposed within a sealed thermally conductive pouch;

a power cord extending into said thermally conductive pouch with an internal end of said cord secured to said coil, an external end of said cord having means for releasable connection to a source of electric power.

7. A thermal storage assembly according to claim 6 wherein said heat retention member includes a sealed

plastic pouch containing a solid open cell foam and a liquid.

8. A thermal storage assembly according to claim 6 wherein said heat retention member includes a sealed pouch containing a phase change material for storing heat as latent heat of a phase change.

9. A thermal storage assembly according to claim 6 further comprising:

a rigid base having a surface area greater than an area of said heating coil assembly;

said heating coil assembly and heat retention member secured to said base with said coil assembly disposed between said base and said heat retention member, said coil assembly and heat retention member covering only a portion of said base to define an uncovered portion of said base;

a thermally conductive material extending from a location adjacent said heating coil assembly to cover said uncovered portion for conducting heat from said heating coil assembly throughout said uncovered portion.

10. A thermal storage assembly according to claim 9 further comprising a thermally insulating foam disposed between said base and said thermally conductive material.

11. A thermal storage assembly according to claim 9 wherein said thermally conductive material is a metallic foil.

12. An apparatus for storing a heated article, said apparatus comprising:

a case having walls defining an interior volume sized to receive said article, said walls further defining an opening for access to said volume;

a cover for closing said opening;

a heating sub-assembly disposed within said volume and having:

a heat retention member for absorbing and retaining sensible heat and for releasing said sensible heat over extended periods of time;

a heating coil assembly secured to a surface of said heat retention member, said heating coil assembly including a resistive heating coil disposed over an area substantially equal to an area of said heat retention member, said coil disposed within a sealed thermally conductive pouch;

a power cord extending into said pouch with an internal end of said cord secured to said coil, an external end of said cord having means for releasable connection to a source of electric power.

13. An apparatus according to claim 12 further comprising an interior wall within said volume for dividing said volume into a first sub-chamber sized to receive said article and a second-chamber sized to receive said heating sub-assembly.

14. An apparatus according to claim 12 wherein:

said walls include spaced apart sidewalls joined by a back wall at a trailing end and further joined by top and bottom walls to define said, said walls further defining said opening;

said walls formed of thermally insulative material;

said cover hingedly secured to an edge of one of said top and bottom walls for said cover to pivot between an open and a closed position, said cover in said closed position covering said opening;

15. An apparatus according to claim 14 further comprising flexible side flaps secured to respective ones of said sidewalls and to said cover, said side flaps including folds for urging said side flaps inwardly into said opening as said cover is moved to said closed position.

16. An apparatus according to claim 15 wherein said interior wall is disposed in overlying relation to said bottom wall.

17. An apparatus according to claim 15 wherein one of said side flaps is releasable secured to said cover with fastening means to permit said cord to extend between said one of said flaps and said cover.

18. An apparatus according to claim 12 wherein:

said heating sub-assembly includes a rigid base having a surface area greater than an area of said heating coil assembly;

said heating coil assembly and heat retention member secured to said base with said coil assembly disposed between said base and said heat retention member, said coil assembly and heat retention member covering only a portion of said base to define an uncovered portion of said base;

a thermally conductive material extending from a location adjacent said coil assembly to cover said uncovered portion for conducting heat from said assembly throughout said uncovered portion.

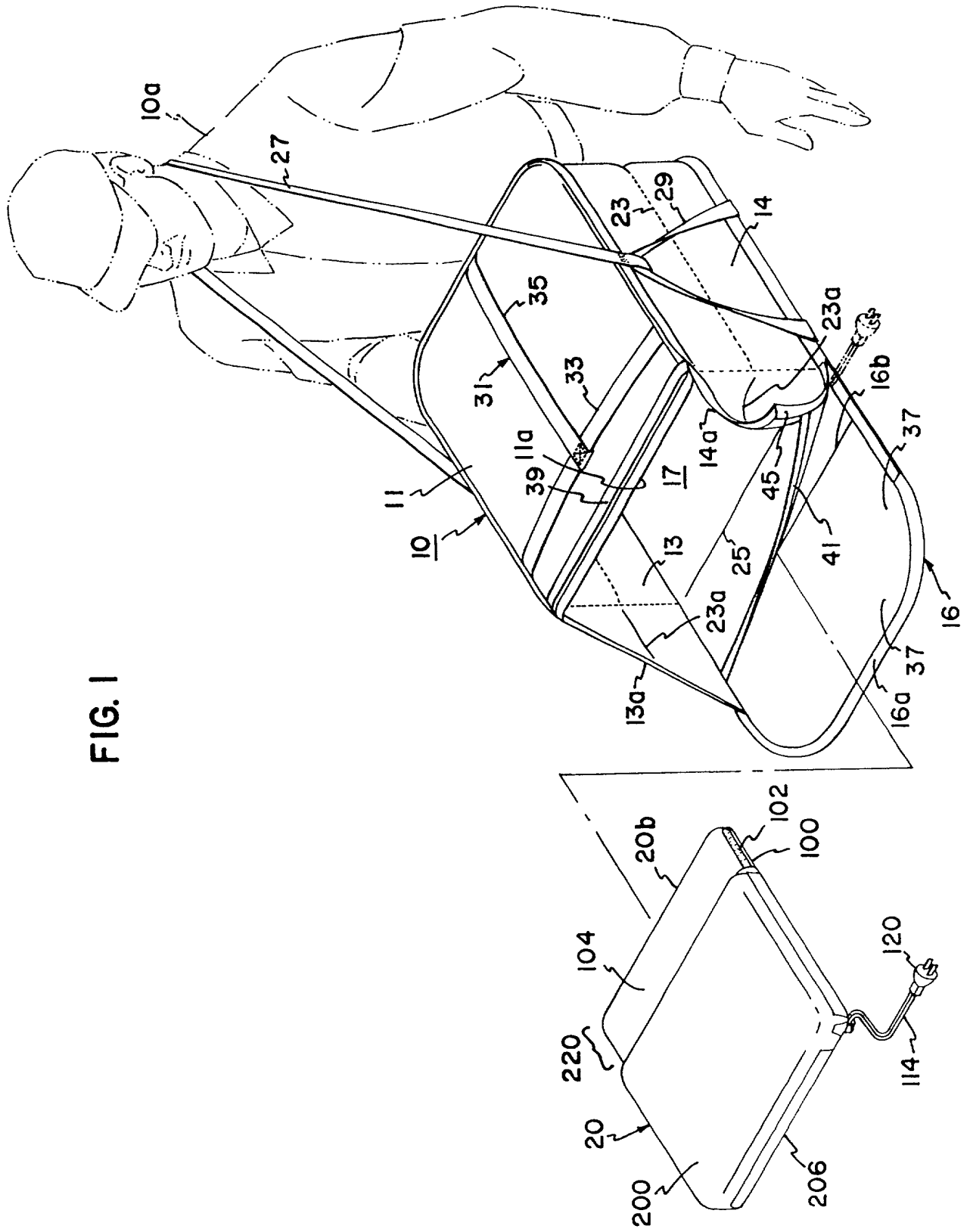
19. An apparatus according to claim 18 wherein said sub-assembly is disposed in said volume with said uncovered portion positioned adjacent a trailing end of said volume.

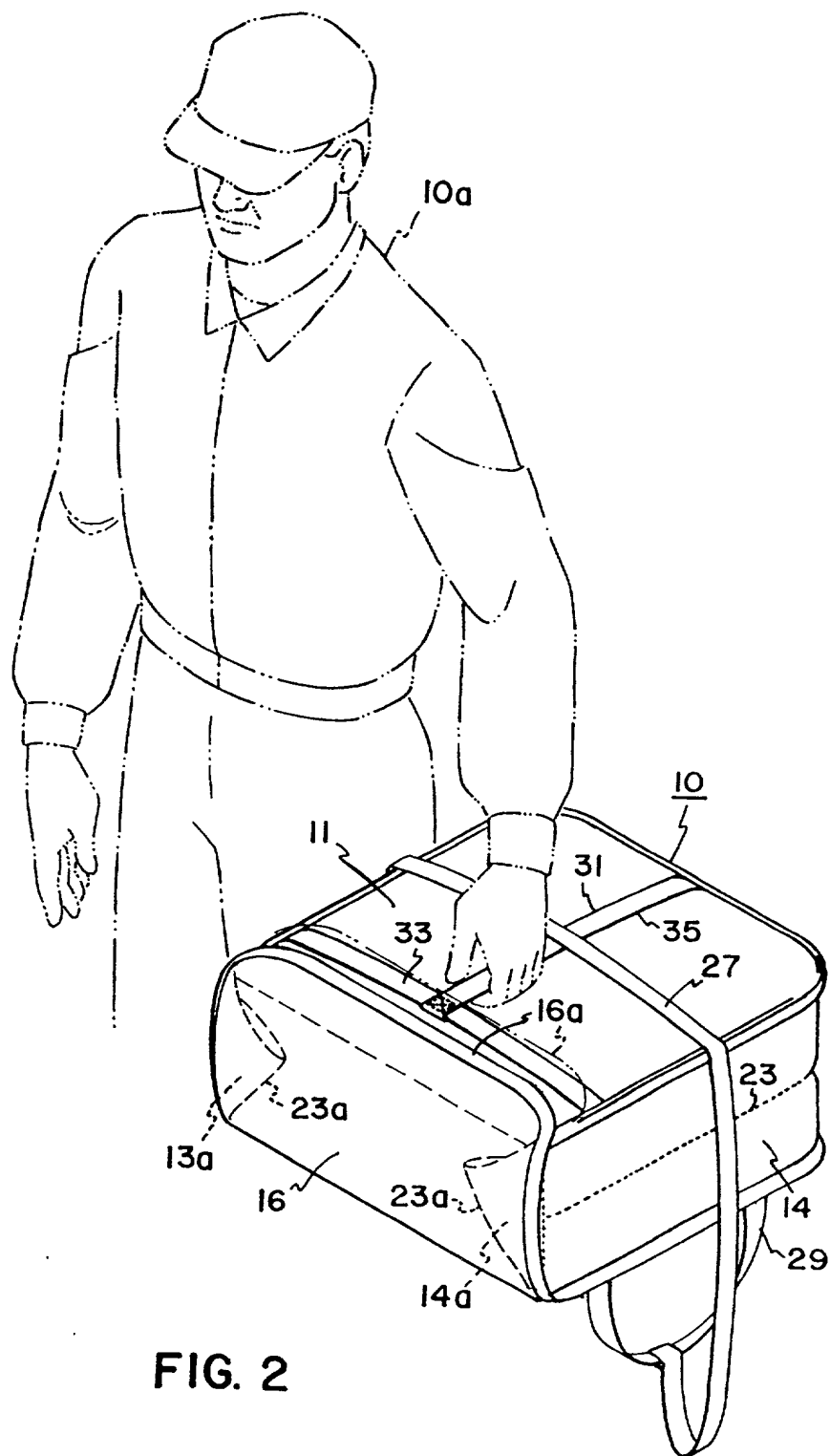
THERMAL STORAGE AND TRANSPORT

Abstract

5 The carrying case for storing and transporting
heated articles includes a thermal storage assembly having
a heat retention member for absorbing and retaining
sensible heat and for releasing the sensible heat of a
extended period time. The thermal storage assembly
10 includes a heating coil assembly secured to a surface of
the heat retention member. The heating coil assembly
includes a resistive heating coil disposed adjacent to the
heat retention member. The heating coil has a power cord
connected to the coil with the coil being retained within a
15 sealed thermally conductive pouch.

| | |
|--|--------------------------|
| <small>CERTIFICATE UNDER 37 CFR 1.10:</small> | |
| "Express Mail" mailing label number: | <u>TB762805593</u> |
| Date of Deposit: | <u>September 6, 1996</u> |
| <small>I hereby certify that this paper or fee is being deposited with the U.S. Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to BOX PATENT APPLICATION, Assistant Commissioner for Patents, Washington, D.C. 20231.</small> | |
| By: | <u>Darrell Whitaker</u> |
| Name: | <u>Darrell Whitaker</u> |





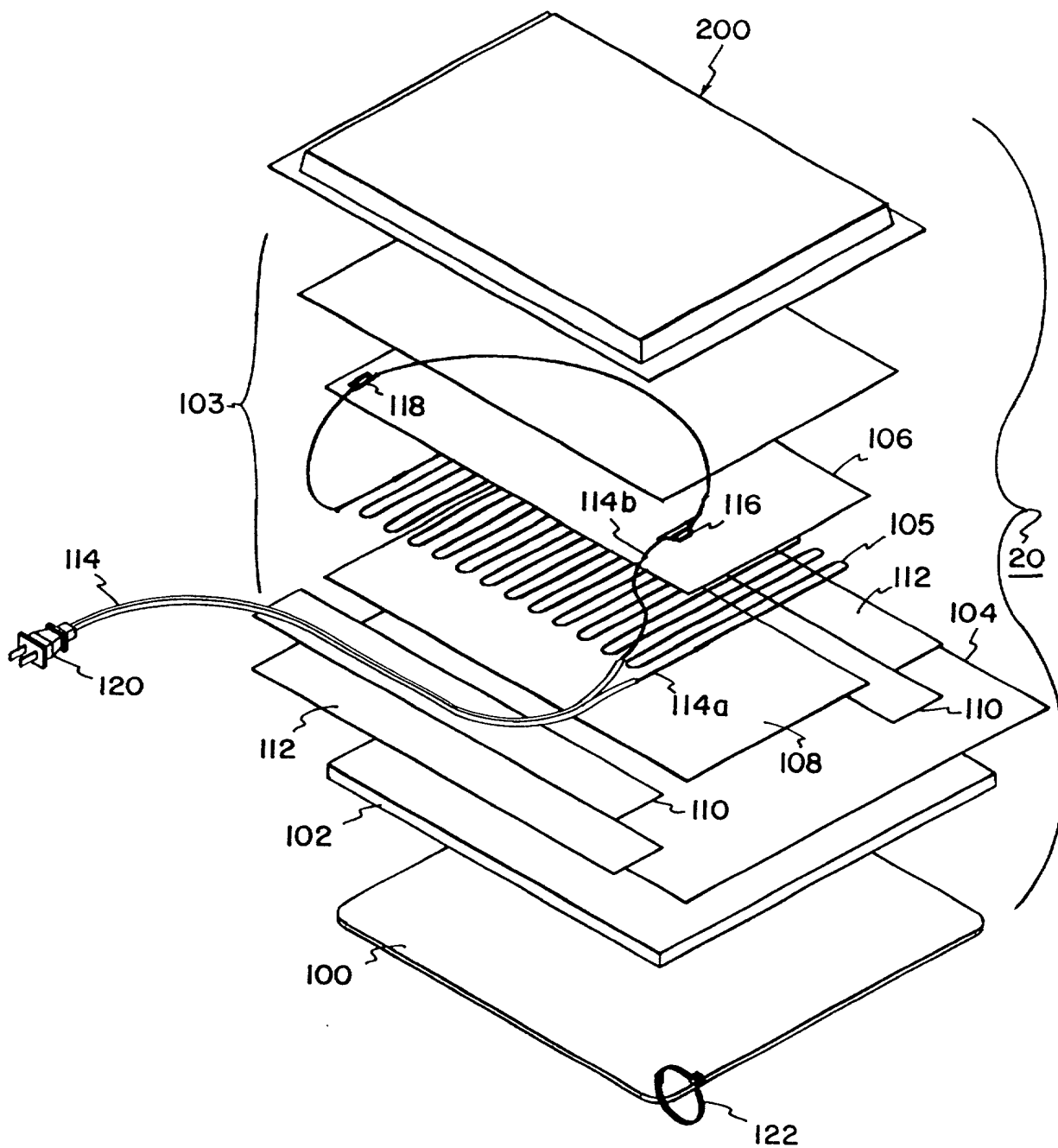


FIG. 5

MERCHANT, GOULD, SMITH, EDELL, WELTER & SCHMIDT

United States Patent Application

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor I hereby declare that: my residence, post office address and citizenship are as stated below next to my name; that

I verily believe I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **THERMAL STORAGE AND TRANSPORT**

The specification of which

- a. ☒ is attached hereto
- b. ☐ was filed on _____ as application serial no. _____ and was amended on _____ (if applicable) (in the case of a PCT-filed application) described and claimed in international no. _____ filed _____ and as amended on _____ (if any), which I have reviewed and for which I solicit a United States patent.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, § 1.56 (attached hereto).

I hereby claim foreign priority benefits under Title 35, United States Code, § 119/365 of any foreign application(s) for patent of inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on the basis of which priority is claimed:

- a. ☒ no such applications have been filed.
- b. ☐ such applications have been filed as follows:

FOREIGN APPLICATION(S), IF ANY, CLAIMING PRIORITY UNDER 35 USC § 119

| COUNTRY | APPLICATION NUMBER | DATE OF FILING (day, month, year) | DATE OF ISSUE (day, month, year) |
|----------------|---------------------------|--|---|
| | | | |
| | | | |

ALL FOREIGN APPLICATION(S), IF ANY, FILED BEFORE THE PRIORITY APPLICATION(S)

| COUNTRY | APPLICATION NUMBER | DATE OF FILING (day, month, year) | DATE OF ISSUE (day, month, year) |
|----------------|---------------------------|--|---|
| | | | |
| | | | |

I hereby claim the benefit under Title 35, United States Code, § 120/365 of any United States and PCT international application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

| U.S. APPLICATION NUMBER | DATE OF FILING (day, month, year) | STATUS (patented, pending, abandoned) |
|--------------------------------|--|--|
| | | |
| | | |

I hereby appoint the following attorney(s) and/or patent agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith:

| | | | |
|------------------------|-----------------|-------------------------|-----------------|
| Adriano, Sarah B. | Reg. No. 34,470 | Kettelberger, Denise | Reg. No. 33,924 |
| Batzli, Brian H. | Reg. No. 32,960 | Kowalchyk, Alan W. | Reg. No. 31,535 |
| Beard, John L. | Reg. No. 27,612 | Kowalchyk, Katherine M. | Reg. No. 36,848 |
| Beck, Robert C. | Reg. No. 28,184 | Krull, Mark A. | Reg. No. 34,205 |
| Bejin, Thomas E. | Reg. No. 37,089 | Lacy, Paul A. | Reg. No. 38,946 |
| Berman, Charles | Reg. No. 29,249 | Lasky, Michael B. | Reg. No. 29,555 |
| Bogucki, Raymond A. | Reg. No. 17,426 | Lynch, David W. | Reg. No. 36,204 |
| Bruess, Steven C. | Reg. No. 34,130 | Mau, Michael L. | Reg. No. 30,087 |
| Byrne, Linda M. | Reg. No. 32,404 | McDaniel, Karen D. | Reg. No. 37,674 |
| Canady, Karen S. | Reg. No. 39,927 | McDonald, Daniel W. | Reg. No. 32,044 |
| Carlson, Alan G. | Reg. No. 25,959 | McDonald, Wendy M. | Reg. No. 32,427 |
| Carter, Charles G. | Reg. No. 35,093 | McIntyre, Iain A. | Reg. No. 40,377 |
| Caspers, Philip P. | Reg. No. 33,227 | Miller, William D. | Reg. No. 37,988 |
| Chiapetta, James R. | Reg. No. 39,634 | Mueller, Douglas P. | Reg. No. 30,300 |
| Clifford, John A. | Reg. No. 30,247 | Nasiedlak, Tyler L. | Reg. No. 40,099 |
| Conrad, Timothy R. | Reg. No. 30,164 | Nelson, Albin J. | Reg. No. 28,650 |
| Cooper, Victor G. | Reg. No. 39,641 | Pauly, Daniel M. | Reg. No. 40,123 |
| Crawford, Robert | Reg. No. 32,122 | Plunkett, Theodore | Reg. No. 37,209 |
| Daignault, Ronald A. | Reg. No. 25,968 | Pollinger, Steven J. | Reg. No. 35,326 |
| Daley, Dennis R. | Reg. No. 34,994 | Reich, John C. | Reg. No. 37,703 |
| Daulton, Julie R. | Reg. No. 36,414 | Reiland, Earl D. | Reg. No. 25,767 |
| Davidson, Ben M. | Reg. No. 38,424 | Schmaltz, David G. | Reg. No. 39,828 |
| Dempster, Shawn B. | Reg. No. 34,321 | Schmidt, Cecil C. | Reg. No. 20,566 |
| DiPietro, Mark J. | Reg. No. 28,707 | Schuman, Mark D. | Reg. No. 31,197 |
| Edell, Robert T. | Reg. No. 20,187 | Schumann, Michael D. | Reg. No. 30,422 |
| Epp Ryan, Sandra | Reg. No. 39,667 | Sebald, Gregory A. | Reg. No. 33,280 |
| Farber, Michael B. | Reg. No. 32,612 | Sharp, Janice A. | Reg. No. 34,051 |
| Fauver, Cole M. | Reg. No. 36,797 | Skoog, Mark T. | Reg. No. 40,178 |
| Funk, Steven R. | Reg. No. 37,830 | Smith, Jerome R. | Reg. No. 35,684 |
| Gabilan, Mary Susan | Reg. No. 38,729 | Sorensen, Andrew D. | Reg. No. 33,606 |
| Gates, George H. | Reg. No. 33,500 | Stinebruner, Scott A. | Reg. No. 38,323 |
| Golla, Charles E. | Reg. No. 26,896 | Strothoff, Kristine M. | Reg. No. 34,259 |
| Gorman, Alan G. | Reg. No. 38,472 | Sumner, John P. | Reg. No. 29,114 |
| Gould, John D. | Reg. No. 18,223 | Sumners, John S. | Reg. No. 24,216 |
| Gresens, John J. | Reg. No. 33,112 | Tellekson, David K. | Reg. No. 32,314 |
| Hamre, Curtis B. | Reg. No. 29,165 | Underhill, Albert L. | Reg. No. 27,403 |
| Hassing, Thomas A. | Reg. No. 36,159 | Vandenburgh, J. Derek | Reg. No. 32,179 |
| Hillson, Randall A. | Reg. No. 31,838 | Welter, Paul A. | Reg. No. 20,890 |
| Hollingsworth, Mark A. | Reg. No. 38,491 | Williams, Douglas J. | Reg. No. 27,054 |
| Johnston, Scott W. | Reg. No. 39,721 | Wood, Gregory B. | Reg. No. 28,133 |
| Kastelic, Joseph M. | Reg. No. 37,160 | Xu, Min S. | Reg. No. 39,526 |

I hereby authorize them to act and rely on instructions from and communicate directly with the person/assignee/attorney/firm/ organization who/which first sends/sent this case to them and by whom/which I hereby declare that I have consented after full disclosure to be represented unless/until I instruct Merchant, Gould, Smith, Edell, Welter & Schmidt to the contrary.

Please direct all correspondence in this case to Merchant, Gould, Smith, Edell, Welter & Schmidt at the address indicated below:

Merchant, Gould, Smith, Edell,
Welter & Schmidt
3100 Norwest Center
90 South Seventh Street
Minneapolis, MN 55402-4131

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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|--|----------------------------|---|--|--|
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| Signature of Inventor 205: | | | Date: | |

§ 1.56 Duty to disclose information material to patentability.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is canceled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is canceled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

- (1) prior art cited in search reports of a foreign patent office in a counterpart application, and
- (2) the closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

- (1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim;
- (2) It refutes, or is inconsistent with, a position the applicant takes in:
 - (i) Opposing an argument of unpatentability relied on by the Office, or
 - (ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

- (1) Each inventor named in the application;
- (2) Each attorney or agent who prepares or prosecutes the application; and
- (3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.